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Bilal Tariq

E-mail

bilal.khokhar301@gmail.com

Phone

+923335666141

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Effective Treatment of Lumpy Skin Disease by Serum Therapy

Burhan Ali Gondal, Bilal Tariq*, Saqib Javed, Hassan Saeed

University Diagnostic Laboratory, University of Veterinary and Animal Sciences, Syed Abdul Qadir Jillani Road, Lahore, Punjab, Pakistan

Abstract

Lumpy skin disease is a World Organization for Animal Health (OIE) listed disease and causes high morbidity around the globe. It causes damage to hide and affects the fertility and productivity of domestic animals. This case report describes the clinical management of lumpy skin disease in a local Sahiwal bull. Bull with the complaint of nodular eruptions on different body parts was presented at the veterinary clinic of University of Veterinary and Animal Sciences, Lahore, Pakistan. A comprehensive medical examination indicated that the bull was feverish, with a rectal body temperature of 105°F and had a burst of small to large-sized circumscribed nodules on various body regions, including the neck area. The diagnosis of lumpy skin disease was verified based on the history, clinical observations, and ELISA results. The case was addressed with a mix of medication (20% oxytetracycline, 1% doramectin, and 5% mepyramine maleate) and serum treatment. The bull recovered and is now healthy.



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Introduction

Lumpy skin disease is a transboundary and World Organization for Animal Health (OIE) listed disease. It causes high mortality of cattle and buffalo. The disease is caused by the Capri pox virus from the poxviridae family, which is a double-stranded DNA virus [1]. It is characterized by the development of different-sized nodules on the skin, fever, and many other signs. It results in a temporary or permanent loss of milk production, infertility or even sterility in bulls, miscarriage of cows during pregnancy, decreased weight growth, irreversible damage to hides, higher treatment costs, and additional feed for sick animals until they recover [2]. The disease is transmitted by arthropods through mechanical transmission. Lumpy skin disease was first noted in Zambia in 1929. Nevertheless, over the past few years, this disease has moved from the Middle East into Western Asia, Southeast Europe, and Southeast Russia [3]. During monsoon season, humidity in Pakistan is remarkably high so the population of arthropods increases and the disease occurrence increases. The morbidity of the disease varies from 3% to 85% while mortality is 40% in the areas of outbreak. Usually, supportive treatment is done with antibiotics for secondary bacterial infection but serum treatment is also highly effective [4].

Case Report

A Sahiwal bull was presented at the veterinary clinic with a history of nodular growth on various parts of the body along with reduced feed intake. On physical examination, it was revealed that the animal was emaciated, depressed and lethargic. On clinical examination high fever was observed (105°F), heart rate and respiratory rate were also increased along with swollen lymph nodes. Close examination revealed that there were different-sized nodules on all



Fig. 1 Nodules on the skin of Sahiwal bull.

over the body specifically at the neck region. The nodules were randomly distributed while some nodules were fused to form larger nodules.

Diagnosis and Treatment

For further confirmation of lumpy skin disease, a sample was taken from the bull. A sample was obtained and ELISA technique was done at the University of Veterinary and Animal Sciences, Lahore, Pakistan diagnostic laboratory. It was confirmed that the bull was having a lumpy skin disease virus. [5]. The bull was quarantined, and a separate area for feeding and drinking was allotted. Moreover, fly repellent was sprayed to prevent the further spread of disease in the local vicinity.

A combination therapy was used, 1st-day serum of recovered animals was used, and 18 ml serum was injected intramuscularly. Next day, 20% oxytetracycline at the dose rate of 20 mg/kg/day for three consecutive days, 5% mepyramine maleate I M for three consecutive days, 1% doramectin at the dose rate of 0.2 mg/kg SC for 1st and 7th day [6]. Fluid therapy with 10% dextrose at the rate of 4000 ml/day with ami-vicom at the rate of 25 ml/day, vitamin B1 at the rate of 15 ml/day and hepagen (Phenoxy-2-methyl-2 propionic acid) at the rate of 25 ml/day was infused for three days. Later, wounds formed by nodules were treated by teragen plus spray (Oxytetracycline: 40 mg, Gentian Violet: 4 mg) [7].

Serum Preparation

Whole blood, around 50 ml was collected from LSD-recovered animal. This blood was placed in a sterile tube having no anticoagulant and the tube was placed tilted in a test tube holding rack. Blood was allowed to clot for 30 to 60 minutes at room temperature. Because if blood is allowed to clot for less than 30 minutes, serum obtained will have a cellular component, and if blood is allowed to clot for more than 60 min, it causes cellular lysis. Clot was removed by centrifugation at 1000 to 2000 rpm for 10 minutes. The resulting supernatant is serum and should be maintained at 2°C to 6°C. From blood sample of 50 ml, 18 ml serum was obtained and was injected at 1st day of treatment.

Discussion

Lumpy Skin disease reveals a number of symptoms most important of which is nodule formation on all parts of body specifically neck and limbs [1]. The

Table 1 ELISA detection of antibodies against LSD.

Sr. No.	Pen 1	Test S/P (%)	Remarks
1	SG-2348337(321)	1	Negative
2	SG-2348577(647)	0	Negative
3	SG-2346869(576)	0	Negative
4	SG-2347873(458)	103	Positive
5	SG-2347365(548)	3	Negative

Expended uncertainty at 95% confidence level = ± 0.52

animal shows signs of fever and is weak and emaciated. The higher vitals respiratory rate and heart rate are also observed. The lymph nodes can be seen enlarged as much as 3 to 4 of their normal size. Most cases can become complicated or spread to other underlying tissues or internal organs, resulting in severe economic consequences [8]. LSD is not associated with high mortality rates (1-3%). However, the economic costs of an LSD outbreak are greater. There are significant losses because of decreased feed intake, decreased milk production, weight loss, abortion, infertility, and damaged hides [9]. As a result, systemic antibiotics and anti-inflammatory medications are critical for treating skin infections, cellulitis, and pneumonia, as well as significantly reducing additional problems and financial losses [10].



Fig. 2 Recovered Sahiwal bull.

In this case, 20% oxytetracycline, 1% doramectin, and 5% mepyramine maleate were administered, as a result, fever, anorexia, nodular lesions, and other deviations were significantly alleviated, although the skin healed with a scar. Similarly, a mix of antimicrobials, anti-inflammatory, supportive care, and antiseptic treatments was used to successfully treat LSD problems and save the animal's life [11].

Conclusion

Lumpy skin disease is now a widespread disease in Pakistan. Though it is not specifically associated with the mortality of animals, it has some drastic effects on livestock production with its marked effects hide industry and milk and meat production. However, these losses can be prevented by quarantine, biosecurity and vaccination for healthy animals and isolation and appropriate treatment for infected animals.

Conflict of interest

The authors declare that they have no conflict of interest.

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